

REMARKS

At the outset, Applicants thank the Examiner for the thorough review and consideration of the subject application. The Final Office Action of December 15, 2003 has been received and its contents carefully reviewed.

By the present amendment, Applicants request entry of amendments to claims 1, 3, 5, 14, 20, and 22-24.

The Examiner rejected claim 24 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention; and rejected claims 1-22 and 24 under 35 U.S.C. § 103(a) as being unpatentable over the related art illustrated in Figures 1-6 in view of Ito et al. (U.S. Patent No. 5,748,179) or Suzuki et al. (U.S. Patent No. 5,739,880) or Lim (U.S. Patent No. 6,429,908); and objected to claim 23 as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Applicants appreciate the indication of allowable subject matter in claim 23.

The rejection of claim 24 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention, is respectfully traversed and reconsideration is requested.

In rejecting claim 24, the Examiner stated the recitation “ ‘wherein a low gate voltage is transmittable by the first gate transmitting line’ is indefinite... [because the phrase] transmittable... indicates the first transmitting line can or may transmit the gate low voltage, but it does not indicate the define function of the first gate transmitting line.”

Applicants respectfully submit, however, that the suffix -able on the verb “transmit” does not mean that the first gate transmitting line “can or may” transmit a gate low voltage. Rather, the suffix indicates that the first gate transmitting line is capable of, fit for, worthy of, etc., transmitting a gate low voltage. It is further respectfully submitted that the word “capable” connotes a quality of having attributes required for performance or accomplishment. Accordingly, Applicants respectfully submit that claim 24 indicates, with sufficient definiteness, the function of the first gate transmitting line and respectfully requests withdrawal of the present rejection under 35 U.S.C. § 112, second paragraph.

The rejection of claims 1-22 and 24 under 35 U.S.C. § 103(a) as being unpatentable over the related art illustrated in Figures 1-6 in view of Ito et al. or Suzuki et al. or Lim is respectfully traversed and reconsideration is requested.

For purposes of providing a clear prosecution history, Applicants note it appears as though Ito et al., Suzuki et al., and Lim are being used to independently modify the alleged teachings of the related art shown in Figures 1-6 of the present application. Accordingly, Applicants hereby proceed assuming the grounds of rejection for claims 1-22 and 24 could alternately have been set forth as “the related art illustrated in Figures 1-6 in view of Ito et al.,” “the related art illustrated in Figures 1-6 in view of Suzuki et al.,” or “the related art illustrated in Figures 1-6 in view of Lim.”

Claim 1 is allowable over the related art illustrated in Figures 1-6 in view of Ito et al. or Suzuki et al. or Lim in that claim 1 recites a combination of elements including, at least “wherein a first gate transmitting line of the plurality of gate transmitting lines has a first resistance, wherein gate transmitting lines other than the first gate transmitting line have a second resistance, and wherein the first resistance is less than the second resistance.” Neither the related art shown in Figures 1-6, Ito et al., Suzuki et al., nor Lim, singly or in combination, teach or suggest at least this feature of the claimed invention. Accordingly, Applicants respectfully submit that claims 2-13, 22, and 24, which depend from claim 1, are also allowable over the related art illustrated in Figures 1-6 in view of Ito et al. or Suzuki et al. or Lim.

Claim 14 is allowable over the related art illustrated in Figures 1-6 in view of Ito et al. or Suzuki et al. or Lim in that claim 14 recites a combination of elements including, at least “a plurality of gate transmitting lines... wherein the plurality of gate transmitting lines comprise two resistances.” Neither the related art shown in Figures 1-6, Ito et al., Suzuki et al., nor Lim, singly or in combination, teach or suggest at least this feature of the claimed invention. Accordingly, Applicants respectfully submit that claims 15-19, which depend from claim 14, are also allowable over the related art illustrated in Figures 1-6 in view of Ito et al. or Suzuki et al. or Lim.

Claim 20 is allowable over the related art illustrated in Figures 1-6 in view of Ito et al. or Suzuki et al. or Lim in that claim 20 recites a combination of elements including, at least “forming a plurality of gate transmitting lines... wherein the plurality of gate transmitting lines comprise two resistances.” Neither the related art shown in Figures 1-6, Ito et al., Suzuki et al.,

nor Lim, singly or in combination, teach or suggest at least this feature of the claimed invention. Accordingly, Applicants respectfully submit that claim 21, which depends from claim 20, is also allowable over the related art illustrated in Figures 1-6 in view of Ito et al. or Suzuki et al. or Lim.

The Examiner cites the related art shown in Figures 1-6 as failing to disclose wherein “one of the gate transmitting lines has a resistance that is less than the other gate transmitting lines (or the gate transmitting lines comprise two resistances) as claimed in claims 1, 14, 20, 22, and 24...” The Examiner attempts to cure the deficiencies of the related art shown in Figures 1-6 by relying upon various teachings of Ito et al., Suzuki et al., and Lim.

Specifically, the Examiner cites Ito et al. as disclosing “that the input wire (Td) to the driving IC (transmitting gate driving signal) comprises a first conductive film (g1) and a second conductive film (d2), and the first conductive film (g1) is formed of low-resistance metal such as Al-Ta or the like and the second conductive film (d2) is formed of low-resistance metal such as Cr or the like. Because the metal Al and Cr are different metal material and that must have different resistivities and different resistances.” Further, the Examiner cites Ito et al. as disclosing “that larger resistance occurs at the gate side and at the drain side would cause the distortion amount of the output waveform of the driving IC is varied every wiring, and this finally causes unevenness of a display image.” After citing Ito et al., the Examiner apparently concludes, stating “[t]herefore, it is necessary to reduce the resistance of the signal transmitting lines in order to reduce the signal distortion such as a cross-talk.”

The Examiner cites Suzuki et al. as disclosing “that it is necessary to reduce the resistance of the output wiring (i.e., the signal transmitting lines) because the signal waveform propagation delay is dependent on the resistance of the signal transmitting lines such as the gate lines and the capacitance loaded upon the signal transmitting lines such as the gate lines (i.e., the RC constant).” After citing Suzuki et al., the Examiner apparently concludes, stating “[t]herefore, the larger resistance of the signal transmitting line would cause larger signal propagation delay, and that would cause signal waveform distortion, and unevenness of a display image.”

Lastly, the Examiner cites Lim as disclosing “that the aluminum... is a low resistance metal and the chromium... is a high resistance conductive metal relatively and that it is conventional.”

After citing Ito et al., Suzuki et al., and Lim, the Examiner concludes that it would have been obvious to... arrange one of the gate transmitting lines having different resistances as claimed in claims 1, 14, 20... for preventing the unevenness of a display image, i.e., to reduce the resistance of the signal transmitting lines in order to reduce the signal distortion such as a cross-talk.

However, as the Examiner is no doubt aware, when a rejection depends on a combination of references, there must be some teaching, suggestion, or motivation to combine the references. Moreover, all of the claim elements must be taught or suggested by the references, or references when combined.

It is respectfully submitted that the Abstract of Ito et al. discloses

“A liquid crystal display device is provided which reduces the resistance of input wires disposed between a flexible board and driving ICs mounted in a flip-chip style.... The liquid crystal display device includes... plural input wires (Td).... Each input wire includes a first metal layer (g1) in the vicinity of the surface of the substrate, a transparent conductive layer (d1) laminated on the first metal layer... a second metal layer (d2) laminated on the transparent conductive film and connected to the first metal layer... and a protection film (PSV1) covering at least the second metal layer.”

Accordingly, Applicants respectfully submit that Ito et al. fails to teach or suggest a liquid crystal display device, or a method of making a liquid crystal display device, that includes a set of gate transmitting lines having different resistances. To reiterate, claim 1 recites, among other elements, “wherein a first gate transmitting line of the plurality of gate transmitting lines has a first resistance, wherein gate transmitting lines other than the first gate transmitting line have a second resistance, and wherein the first resistance is less than the second resistance;” claim 14 recites, among other elements, “a plurality of gate transmitting lines... wherein the plurality of gate transmitting lines comprise two resistances;” and claim 20 recites, among other elements, “forming a plurality of gate transmitting lines... wherein the plurality of gate transmitting lines comprise two resistances.”

Similarly, Suzuki et al. can be reasonably understood to teach, at column 12, lines 5-27, that it is “necessary to reduce not only the variation of the wiring resistance, but also the resistance itself of the output wiring” due to the existence of a waveform distortion ultimately brought on by a resistance R of the gate line GL in the effective display portion AR (see Figure 7). In light of the above, Suzuki et al., however, cannot be reasonably understood to teach or even suggest a liquid crystal display device, or a method of making a liquid crystal display

device, that includes a set of gate transmitting lines having different resistances as claimed in claims 1, 14, and 20 above.

Lastly, Lim teaches at column 3, lines 9-18, that

“an active panel includes a repair line... [wherein] all parts of the repair line are formed when the gate electrode is formed. Therefore, the repair line comprises low resistance metal such as Al, AlNd, Mo and Cu so that any signal delay occurring at the detoured data line is significantly reduced.”

Accordingly, Applicants respectfully submit that Lim fails to teach or suggest a liquid crystal display device, or a method of making a liquid crystal display device, that includes a set of gate transmitting lines having different resistances as claimed in claims 1, 14, and 20 above.

In light of the above, Applicants respectfully submit that Ito et al., Suzuki et al., and Lim not only fail to teach or suggest at least the aforementioned combination of claimed elements, but actually teach away from the present claimed inventions defined by claims 1, 14, and 20, reiterated above. Accordingly, Applicants respectfully submit the requisite motivation to combine the references, and arrive at the claimed inventions, is absent. Rather, Applicants respectfully submit that motivation to combine the cited references is found only in the present application via the use of impermissible hindsight reasoning.

If the Examiner deems that a telephone conversation would further the prosecution of this application, the Examiner is invited to call the undersigned at (202) 496-7500.

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If these papers are not considered timely filed by the Patent and Trademark Office, then a petition is hereby made under 37 C.F.R. §1.136, and any additional fees required under 37 C.F.R. §1.136 for any necessary extension of time, or any other fees required to complete the filing of this response, may be charged to Deposit Account No. 50-0911. Please credit any overpayment to deposit Account No. 50-0911. A duplicate copy of this sheet is enclosed.

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